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Online Learner's Guide to Course "3551": Research Issues in Educational CMC - OISE

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Course Structure

Foreword	
Session 1:	Introduction to the Course
Session 2:	Research Issues in Educational CMC
Session 3:	Developing a Research Agenda
Session 4:	Computer Conferencing in the Context of the Evolution of the Media
Session 5:	Towards a New Paradigm for Distance Education
Session 6:	Online Education: A New Domain for Collaborative Learning
Session 7:	Social Factors Research in CMC
Session 8:	Cognitive and Technical Issues in Educational Computer Networking
Session 9:	Hypertextual Transcript Analyses of Educational Computer Conferences
Session 10:	Evaluating the Virtual Classroom
Session 11:	Analyzing Instructional Interactions on Electronic Message Networks
Session 12:	Review and Synthesis of Course Discussions
Session 13:	Course Wrap-Up and Evaluation

FOREWORD

Welcome to Course 3551S LDE "Research Issues in Educational Applications of Computer Communications". This course is delivered entirely online[1], using the computer conferencing system, Participate. Before introducing the course content and activities, I'd like to outline the basic course requirements and course design, and to discuss working with the conferencing process in this course.

1. Course Expectations and Requirements

Because this course is an OISE graduate level credit course, I have several expectations: the first is that you will participate on a regular basis, reading the required articles for each session and participating approximately 2-3 hours per week in the online seminars and group activities. Participation in the conferences should occur primarily offline, on your local system. Download messages for reading and reflection. Compose and then upload your response.

The second expectation is that you complete all assignments as required.

Grades will be based on the following system:

1. Participation in course discussions ..... 20 %
2. Assignment # 1 ..... 25 %
3. Assignment # 2 ..... 25 %
4. Assignment # 3 ..... 30 %

The assignments are based on both group and individual work. The grading procedures for group assignments will take into account *both* the group product/output and the individual contribution to that group product.

The three assignments for the course are:

1. Assignment #1: Develop, with your learning partner, a Research Agenda for Online Education: Present the Research Agenda online by January 20, 1989.

2. Assignment #2: in a group of 2 or 3, moderate an electronic seminar for one session. Moderating the seminar involves preparing an introduction to the reading(s) and key themes, maintaining the focus and dynamic of the discussion during that session, and concluding that

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[1]The exception is the first meeting which is held face-to-face. The purpose of the face-to-face meeting is to introduce the course curriculum.

session by synthesizing the key points that emerged during that session. In 4 sessions (sessions 3-6), the moderating team will be a dyad, and will facilitate the discussion by hosting the guest e-lecturer; in the 4 remaining sessions, there will be no guest lecturer; teams of 2-3 will present key issues and advance the discussion.

3. Assignment #3: An individual paper of approximately 15 printed pages, on a topic to be decided on by you, with agreement of the instructor. The paper must be submitted (either online or delivered to my office) by April 20th.

2. Course Design

Computer conferencing is a group or many-to-many communication medium. This course employs a group learning design to promote collegial interaction and active learner involvement in the discussions and analyses. Success in group learning rests on student participation. Your contact with others in the course will challenge you, and help you to clarify your ideas, expand your understanding, provide new information and perspectives, and enable you to draw useful conclusions.

The design of this course is primarily based upon electronic seminars, involving guest lectures and plenary group discussions. Each week a new theme is addressed; the readings and guide to discussion are provided in this learning guide.

The course begins with a discussion of Research Issues for Educational CMC. Sessions 1 - 3 explore this theme in various ways. Sessions 4 - 11 examine Research Perspectives for online education. Three perspectives are presented: Theoretical Perspectives (Sessions 4 - 6), Design Perspectives (Sessions 7 - 8), and Methodological Perspectives (Sessions 9 - 11).

Collaboration in the computer conferencing environment requires structure and coordination. This is particularly true for assignments based on groups. Since there is a deadline for each group assignment, it is wise to approach these tasks by clarifying the procedures for accomplishing the task. Begin each group assignment by discussing the division of labour, which involves identifying the component tasks and having individuals within the group each assume their share. Establishing timelines and coordination procedures will play an important part in task accomplishment.

The course design is student-centered: I will participate and will follow the discussions. However, the course dynamics rely on your ability to participate in and con-

tribute to the creative and analytical interaction of the group. The success of computer conferencing is based on how willing we are to share ideas and to participate actively.

3. Permission to Research

Based on OISE's experience of delivering courses online over the past three years, both instructors and students have found it fun to use and a compelling medium for learning from one another's experience and ideas. We are also learning a great deal about the use of this new medium in the process. To help develop a base of knowledge about online education, we conduct systematic research on the nature of the learning interactions within the various courses in all online courses. Data is collected on usage statistics (# of hours online/person; amount written/person) as well as transcript analysis of selected conferences (anonymity is assured). I will ask you at the Introductory Meeting to consider participating in the research aspects of the course.

How to work with the conferencing process

1. How to conference

Participate (or Parti)[2] is a state-of-the-art conferencing system used by such commercial networks as the Source and NWI (the Networking and World Information Network), and educational institutions such as MIT, the University of Paris[3] and the American Open University. Information on using the system is available in your Users Guide. There is also online support such as the help commands and the "assist" conference.

The conferencing week begins on Tuesday and ends the following Monday. In each week we cover a specific session topic (refer to the Course Structure, page 1). A session may 'branch off' into sub-topics or 'branch-conferences'. The topic, procedures, activities, and readings for *each* session are presented later in this Learning Guide so that you are adequately prepared for all the class discussions, questions, clarification, etc, which will take place within the computer conferences.

2. Follow these Procedures for working within Parti

1. Read the Learning Guide notes for each session, which will also list core (and in some cases optional) readings. Read the core readings as indicated: they are provided in your learning package.

2. Log on to OISE's Participate system at least twice a week. Your total participation in online discussions should be 2-3 hours/week[4].

3. Arrange your schedule of logons to occur to occur at least twice each week:

    a. towards the beginning. Here you should address the specific issues outlined for each session and present your comments, ar-

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[2]"Participate" and "Parti" are registered trademarks of Network Technologies International, Ann Arbor, Mich., U.S.A.

[3]The University of Paris uses the bilingual version of Parti, Participe Present, as does OISE.

[4]Learn to up/download messages as soon as possible, to read and write comments on your home system (offline).

guments, positions, analyses as well as read those of your colleagues.

b. towards the end. Read all the comments in the core conference(s) for that week and add a final comment/summary statement. At the end of each 'session', make a WEAVING statement, approximately 3-4 sentences, in which you identify the key theme(s) that emerged during the discussion that session, what you learned, and any questions/issues were not resolved, which might be taken up subsequently.

3. Online Communication 'NETiquette'

1. **Thread** your related comments in a conference: a very important convention when responding to an earlier comment (in a conference) is to **begin with a cross-reference, by noting the message number and the issue:** ie, 'in response to #27 about computer networks in elementary schools....'

2. Message length: keep it short! One screen (or at most 1 ½ screens) per message should be considered a maximum length. This is not an absolute rule. There may be times when what you have to say simply won't fit into this limit. But think of your readers. Short is beautiful, in the online medium. One hint: if you have a long statement or comment, break it up into shorter messages.

3. Don't crowd too many ideas into one message: one point, plus example, is a good rule of thumb (or finger) per message.

4. Don't dominate a conference discussion through excessive messaging. Your readers will not be receptive if they are overloaded with messages.

5. Consider the visual layout of your comments. Comments are easier to read when organized as short paragraphs interspaced with a blank line. But don't overdo this by double spacing your text.

6. In making your discussion comments, don't worry too much about grammar, spelling, typos, etc. What is important is intelligibility: the flow of ideas and discussion. Assignments (on the other hand) should be presented as final copy.

7. Please use the convention of upper and lower case lettering.

4. Climate Building

An important aspect of the group process in conferencing is climate building. Climate building refers to the active attempt to create a group or community feeling in order to facilitate the communication processes. Positive climate building can reduce anxiety about the system and increase affectivity within the medium.

Help build climate by:

- using first names among participants;
- responding promptly to messages sent to you;
- using reinforcement phrases, eg. 'Good idea!' 'Thanks for the suggestions!' etc.
- the occasional use of personalizing remarks, ex. a reference to where you are working (at home, work, office, kitchen, school, what is happening around you, the weather, etc.
- building trust by avoiding hostile comments;
- displaying humour;
- promoting cooperation by offering assistance and support to other participants and by sharing ideas;
- using gender inclusive language.

5. Learning Log

You are invited to share with your colleagues brief summaries of significant insights you are developing with regard to online learning. These should be entered in a metaconference entitled "Learning Log". Our final session of the course will focus on conferencing and networking as a medium for communication and education; this log will provide a useful resource for that reflection and discussion.

OVERVIEW OF **CORE** CONFERENCES

Mode	Week	Topic	Conferences
F2F	1	Introduction to the Course	"intros 3551" "our objectives" "debate"
E-Seminar	2	Research Issues in Educational CMC	"research issues"
Online Learning Partners	3	Assignment # 1: Developing a Research Agenda	"research agenda"
Guest Electronic Seminars	4	Media Philosophy	"media"
	5	Distance Education	"distance education"
	6	Collaborative Learning	"online education"
	7	Social Factors	"social factors"
E-Seminars	8	Cognitive and Technical Issues	"crossing networks"
	9	Hypertextual Analysis	"hypertextual analysis"
	10	Virtual Classroom	"virtual classroom"
	11	Network Analysis	"network analysis"
E-Plenary & Poll	12	Review of Course	"synthesis"
	13	Wrap-Up; Self-Evaluation; Balance Sheet	"feedback"

SUPPLEMENTARY (ON-GOING) CONFERENCES

	Conferences
A conference for students to request and offer help related to the use of the computer conferencing system. This is a group space, so "assist" one another.	"assist"
A conference space for informal discussions, socializing.	"coffeehouse"
A conference area to comment on personal learning experiences and/or to share new ideas and insights related to the use of computer conferencing in education.	"learning log"
This is a space for communicating with OISE librarians, about specific titles/holdings.	"library"

SESSION 1

Introduction to the Course

Welcome to this online course. This course topic introduces an innovative field: research issues in the use of computer-mediated communication in education (also referred to as "online education", "virtual education", and/or "electronic education").

The conferences for this session are:

1. **"intros 3551"**: A space to introduce yourself to the group.

2. **"our objectives"**: A space to set out your objectives with regard to researching educational applications of computer-mediated communication. Give reasons for your choice.

3. **"debate"**: A space to say where you stand with regard to researching computer-mediated communication in education: do we need a special research theory/methodology formulated particularly for online education? Support your position.

These discussions lead into the theme for Sessions 2 and 3. a) Contribute to the above conferences. b) Then, do the readings for Session 2 and participate in the conference **"research issues"**.

SESSION 2

Research Issues in Educational Computer-Mediated Communication

Week 2

This session introduces issues related to researching educational computer-mediated communication.

Online education is a very recent phenomenon: computer conferencing was first used for educational applications only in 1982. Today the use of computer-mediated communication (CMC) is rapidly growing in education, from elementary to graduate schools, adult education and professional development and training. However, both practical and research understanding of this phenomenon are only just beginning to emerge.

OISE has played a pioneering role in educational computer conferencing. It was the first institution in North America or Europe to offer graduate-level courses entirely online and to promote the use of CMC to facilitate teacher networking and the delivery of professional development. OISE is also actively involved in researching online education.

Our vision, while pioneering, nevertheless needs to develop a focus or framework to help us to better understand and benefit from practical experience and to guide future activities. There is a need to reflect on how we as educators, learners, and educational researchers, can use online education to enhance learning. We need to address such fundamental issues as: "what is 'online education'? What kind of educational environment does it offer? What ought to be considered in developing and advancing this field? If we don't consider these basic questions we risk becoming technicians without a conceptual and pedagogic framework.

Here we initiate discussion on this topic by *brainstorming* as wide a variety of research issues as we can. From this list we will organize that discussion to identify key issues that you think ought to be addressed within a Research Agenda. The development of a Research Agenda is the task of Session 3 (see page 13).

Notes on the Readings:

The first reading, Winkelmans (1988), provides a valuable overview of the state-of-the art of educational CMC, examining the directions that the new CMC technologies are taking and reviewing the literature on reasons for acceptance by users. This background reading helps to situate specifically educational issues.

The second and third articles do not focus on specifically educational issues or applications of CMC, but provide a more general approach and consideration of CMC research derived from organizational communication studies.

Rice (1988), a major figure in computer communications research, has published prolifically on the topic. His particular focus is *network analysis*. In this article he provides a synthesis of network analysis and the use of system generated data for researching CMC activities. The article is useful not only for summarizing the network analysis perspective but in highlighting Rice's view of key research issues in the field.

The third article, Johansen (1976), is interesting because while it was written over a decade ago, the issues raised remain pertinent to CMC research in general, as well as to specifically educationally focussed study. Johansen, working from the Institute for the Future, has conducted a great many research activities on various teleconferencing technologies, including audio, video, and computer. He continues to publish on this topic[5]. In this early article, he identifies many intriguing issues to be considered in researching and evaluation of teleconferencing technologies.

Read the articles and consider issues you view as pertinent to researching the field.

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[5]See Robert Johansen, Jacques Vallee and Kathleen Spangler, *Electronic Meetings*, 1979; Robert Johansen, *Teleconferencing and Beyond: Communications in the Office of the Future*, 1984; R. Johansen and Christine Bullen "Thinking Ahead: What to Expect from Teleconferencing", in Grief, I. (Ed.) *Computer-Supported Cooperative Work: A Book of Readings*, 1988.

CORE Readings for Session 2

Johansen, R. (1976). *Pitfalls in the social evaluation of teleconferencing media.* Menlo Park, Calif: Institute for the Future. Reprinted from the Second Annual International Communications Conference on "The Status of the Telephone in Education", University of Wisconsin, May 27-28, 1976.

Rice, R. (1988) Collection and analysis of data from communication system networks. *Communications of the ACM*, March, p. 134-140.

Winkelmans, T. (1988) Chapter 1: Introduction. *Educational computer conferencing: An application of analysis methodologies to a structured small group activity.* p. 1-22.

OPTIONAL Readings for Session 2

Ehrmann, S. (1989) Improving a distributed learning environment with computers and telecommunications. In Mason, R. & Kaye, T. (Ed). *Computers, Communication and Distance Education.* Oxford: Pergamon Press.

SESSION 3: Assignment #1

Developing a Research Agenda

Week 3

Educational research, like all forms of research, aims to create new knowledge and contribute to the improvement of existing practice. In the newly emerging field of educational computer communications, there is a need to contribute to developing a research discipline. Novak and Gowin (1984) note that "the historical sequence of disciplinary advances corresponds roughly to the regularity of the naturally occurring events or objects being studied and how easily they can be observed...All disciplines are also dependent upon the concepts humans invent to be able to see regularities, even in naturally occurring phenomena." (p. 149) The development of a research discipline rests upon observing and naming regularities in the phenomenon being studied. Social phenomena are far less regular and less directly observable than that of nature, and this---according to Novak and Gowin---makes more difficult the study of human phenomena. Their perspective distinguishes research in education from that of research of the sciences, by the *artifactual* nature of educational events or objects: that is, educational events are produced by people rather than being naturally occurring, and being subject to the vagaries of human nature are much less predictable and consistent.

The largely artifactual nature of education thus poses a challenge to developing a research discipline. Nevertheless, the artifactual nature of education has the positive feature of the possibility of modifying and improving the field by informing the choices that we can make. We can influence the course of events/activities. There is therefore a critical need to increase our body of knowledge on the subject in order to influence future choices. And the challenge and role of educational research is to construct that body of knowledge.

Novak and Gowin speak to the larger field of educational research, rather than specifically media or CMC activities.

Included with this week's readings as well are a couple of articles specifically on the topic of educational research into media. Torkelson (1987) speaks to the need for theoretical bases for research in media, while Salomon (1977) examines methodological issues: how to approach educational research into media. These discussions are primarily related to traditional educational media, rather than the new media. (Discussions of the new media are found in Winkelmans and in the Supplementary Readings).

Chapter Two of Winkelman's MA thesis reviews research on educational CMC. The overview is valuable for organizing and synthesizing research trends and developments in educational CMC as well as in the field of organizational CMC.

These four readings comment on the importance of the need to develop a research discipline in educational technology, and hence frame the task for Session 3, Assignment # 1.

Supplementary materials for this session (and assignment) are listed at the end of this section. Salomon (1984) writes about setting a research agenda for computers in education. There may be some points or approaches here of interest to the specific focus of computer-mediated communication in education. Rice (1984) and Steinfield (1986) provide valuable reviews of the literature on research issues and approaches to CMC, although not from a specifically educational perspective. Nevertheless, these article are useful since the researchers stress the importance of the need for new theoretical and methodological perspectives and approaches to the study of new media. Advances in both theoretical and methodological perspective are needed to help understand and improve educational CMC.

I have made these last three articles available in the library. If you wish to order them, send a note to the "library" conference.

The first assignment for this course is to work in learning partnerships to develop a research agenda to guide future study and development in this field. Which research

needs should be addressed? What are the critical issues that educational research must confront and resolve? What are the problems and issues central to the use of CMC in education? And how might these problems and issues best be approached?

This assignment may be approached in various ways: 1) you may focus your presentation on the need for theoretical and conceptual frameworks to guide research into online education by presenting one or various perspectives that ought to be considered; 2) you may address methodological issues, either as a topic alone or linked with a particular framework which guides the development and use of research methodologies and instruments; or 3) you may identify, synthesize and organize various perspectives and/or issues that need to be addressed (i.e., access issues; social and/or cognitive consequences of online education, etc).

The objective of this assignment is to focus your experiences and reflections on educational CMC into a synthesized proposal or agenda for researching educational CMC. Draw upon your past experiences in online education, particularly but not exclusively in the course surveying educational CMC (1551) and the "great debate"; organize these experiences and information resources by considering them from the perspective of educational research. The readings provided for this session can assist you.

The assignment involves the following activities:

1. choose a learning partner for the assignment;

2. together, decide on a set of tasks, define a timeline and organize your methods of communicating and collaborating online for this project;

3. develop a statement of what you consider to be the major issues facing educational research into educational CMC and an 'agenda' what needs to be done (and why);

4. defend your position, based upon the course readings and other appropriate resources (discussions/debate from 1551; other readings, etc.);

5. limit your discussion to one or a few major educational research trends/perspectives/approaches (do not try to make a comprehensive or exhaustive review). The Research Agenda should be 3-5 screens in length.

There are several ways to organize your online collaborations: you may divide the sections; you may both work on all sections of the presentation; or you may each select an issue or theme, which you develop separately and then weave together. Maintaining contact and collaborating with your partner on the key issues is important.

READINGS

CORE Readings for Session 3

Novak, J.D. and Gowin, D.B. (1984). Improving educational research. In *Learning how to learn*. New York: Cambridge University Press.

Torkelson, G.M. (1987) Theoretical bases for research in media. *Canadian Journal for Educational Communication, 16*(7): 3-10.

Winkelmans, T. (1988). Chapter 2: Educational computer-mediated communications and group interaction methods. *Educational computer conferencing: An application of analysis methodologies to a structured small group activity*. p. 23-47. Master's Dissertation, OISE.

SUPPLEMENTARY Readings available through the Library

Rice, R. (1980) The impacts of computer-mediated organizational and interpersonal communication, *Annual Review of Information Science and Technology*.

Rice, R. (1984) Evaluating New Media Systems. In J. Johnston (Ed.) *Evaluating the New Information Technology*, San Francisco: Jossey-Bass.

Steinfield, C.W. (1986) Computer-mediated Systems. *Annual Review of Information Science and Technology*, Vol. 21, pp. 166-202.

SESSION 4

Computer Conferencing in the Context of the Media

Session 4 is a Guest E-lecture with Paul Levinson, Pres. of Connect Ed. This session begins a discussion on Theoretical Perspectives for the newly emerging field of educational CMC or online education.

The discussion of Theoretical Perspectives includes Sessions 4, 5 and 6.

Theoretical Perspectives

What theoretical frameworks can help to illuminate the phenomenon of online education? This challenge is first taken up by Paul Levinson who addresses the question of how to situate educational computer-mediated communication within the historical development of media. In "Computer Conferencing in the Context of the Evolution of the Media", Levinson analyzes the current characteristics and consequences of computer-mediated communication in education in the light of the impact, on education and on society, of four prior developments in human communication: spoken language, alphabetic writing, the printing press, and electronic audio-visual media.

The thesis proposed is that we can better understand the current performance of CMC, and plan for its future use and development, if we consider what prior media have done in similar educational situations. Important innovations in communication made possible by CMC (which entails telecommunication of word-processed text) include the liberation of text from the printed page--making the text infinitely revisable, readable by an infinite number of people at the same time, transmissable at the speed of light to anywhere in the world--and various capacities for interactivity not possible in either in-person or printed communications. A case study is considered from the perspective of analogous issues in earlier media.

Levinson's chapter launches the discussion of Theoretical Perspectives and the next two chapters which present two quite differing perspectives on educational CMC.

SESSION 5

Towards a New Paradigm for Distance Education

In the reading for Session 5, Mason and Kaye examine educational computer conferencing from the perspective of distance educators, premised on a one-to-one or one-to-many model of interaction. The Theoretical Perspective here is that online education is a variant of an existing educational mode, distance education.

Mason and Kaye, writing from their professional base as distance educators working at the Open University, UK, explore the contribution of computer conferencing for opening a new paradigm within their field. "Towards a New Paradigm for Distance Education" looks at how the introduction of computer conferencing is breaking down the distinctions between distance education and place-based education. Does educational computer communications change traditional distance educational instructional and administrative roles (i.e., faculty, adjunct tutors, administrative and support staff)? What opportunities are presented by this medium for collective thinking and peer exchange?

Mason & Kaye's chapter grows out of an online discussion among educators who have used computer conferencing to deliver online education. A definition of distance education with six elements is used as the framework to describe the effects of introducing computer-mediated communication into both large scale and small scale distance education institutions. The differing viewpoints of the discussants, whose experience spanned both large and small applications of computer conferencing generated new paradigms for future educational programs. The chapter concludes by outlining a new paradigm: decentralized institutions where students could choose courses at the regional or global level, delivered by varying combinations and levels of electronic and other media, and including access to resource and support people drawn from a much broader base than the teaching profession.

SESSION 6

Online Education: A New Domain for Collaborative Learning

"Online Education: A New Domain for Collaborative Learning and Knowledge Networking" presents a different educational research perspective for online education: that online education is a new domain for education. This article argues that the unprecedented feature of CMC in educational applications is the introduction of a new collaborative, many-to-many domain---one which is asynchronous, text-mediated, and supports distributed group learning interactions. Online education, in this perspective, has similarities to but also significant differences from, the other two major educational domains--the face-to-face and distance modes.

This approach implies an entirely new approach to understanding, researching, and designing collaborative interaction within the new medium, with implications both for the design and delivery of education in online mode and for scholarly research into this domain. It also provides a framework for examining parallel but converging sociotechnical systems such as hypertext and computer-supported cooperative work environments which suggest new ways of drawing upon and managing the richness of the conferencing environment to enhance connectivity and augment knowledge networking.

SESSION 7

Social Factors Research in CMC

Design Perspectives

Design perspectives for online education takes up issues related to the how the new domain is conceptualized and organized to facilitate implementation of an online educational activity.

Andrew Feenberg and Beryl Bellman introduce the notion of "Social Factors in Computer-mediated Communication". Their chapter argues that as computer-mediated communication comes to offer study and work environments for groups of users rather than simple tools for individual work, it will be increasingly important to take social considerations into account in designing programs.

The design of electronic social environments requires attention to what they call the "social factors" determining user acceptance and satisfaction where the "users" are not individuals but social groups. This chapter offers two approaches to the study of social factors. Practicing consultants in social networking design are repositories of a great deal of practical knowledge in this field. In addition, a variety of social theories can be employed to develop testable hypotheses about the needs of different types of user groups.

To bring these two forms of knowledge about social factors to bear on program design, the chapter presents a model for relating group needs to communication requirements and program features. This model is intended to serve as a basis for tailoring systems in socially specific configurations.

SESSION 8

Cognitive and Technical Issues in Educational Computer Networking

Denis Newman's "Cognitive and Technical Issues in Educational Computer Networking" explores the design of online educational environments from the perspective of cognitive and technical issues in computer networking. The chapter is organized into three subsections: the first illustrates three design principles that arise out of the desire to maintain a common 'conversation' or conference in the diverse context arising from the growing use of powerful microcomputers. Secondly, he discusses the components of current network systems in terms of the connections among various levels of the system. This leads to the third topic, the discussion of cognitive issues in terms of the degrees of coordination that can be achieved in computer-mediated conversations in local settings and over longer distances in the face of diversity.

Newman makes the point that understanding the system in terms of both the face-to-face and computer-mediated conversations is especially important in designing systems for education where the nature of the educational activity may require coordination around mediated concrete objects.

SESSION 9

Hypertextual Transcript Analyses of Educational Computer Conferences

Methodological Perspectives

Session 9 initiates a discussion of Methodological Perspectives, formulated specifically for studying online education. This discussion will take place over the next three weeks: Session 9 introduces a new methodology pioneered at OISE entitled Hypertextual Transcript Analysis; Session 10 presents the methodology and tools designed for the Virtual Classroom study; and the final piece of this discussion, Session 11, introduces four research methods developed for Analyzing Instructional Interactions on Electronic Message Networks.

Computer conferencing can be conceptualized as a form of "hypertext", which we may begin to define as a non-linear networking of textual information. In this paper, computer conferencing is examined from two hypertext perspectives. First, a computer conference is considered as an application or instance of hypertext, each conference consisting of text items with complex linkages. The participants can view the conference at different levels of detail or abstraction, through application of branching and browsing mechanisms. But existing computer conferencing programs provide only weak hypertext tools for organizing and viewing a conference. Consequently, we find conference users inventing their own hypertext adjuncts. This leads us to consider hypertext as an interface design model for computer conferencing. We would like to provide a better grasp of overall content and structure of a conference in progress, better navigation tools, and a more efficient process of contribution and interpretation.

A second hypertext perspective is its application for analyzing computer conferences. The design issues for the hypertext interface are parallel to the research issues in analyzing what went on in a computer conference. The content analysis of a com-

puter conference concerns the qualitative determination of who said what, when in the chronological sequence or the logical sequence things got said, and how things got said. Hypertext systems allow us to split a conference into its items, label and categorize items, make explicit our interpretations of the linkages, and read back and tabulate what we find.

In this paper, three hypertext systems (STORYSPACE, IZE, and NOTECARDS) are applied to computer conferencing transcripts to illustrate the possibilities of the hypertext perspective and explore some of the issues that the hypertext perspective raises for computer conferencing analysis and design. What is the relative importance of defining categories of items versus labeling items? For example, the IZE program requires immediate assignment of keywords and thus forces early verbalization of content articulation. Are categories sufficient for conference organization, or does one need more complex networks? What is the most appropriate unit for hypertext organization of computer conferencing items? One might operate with the conference note as the unit, or one might apply hypertext methods to pointers to a continuous transcript. Finally, the most important issue in applying hypertext to computer conferencing seems to lie in deciding who controls the hypertext: is it each participant separately, is there a union hypertext, or does there need to be central control?

SESSION 10

Evaluating the Virtual Classroom

Roxanne Hiltz provides an in-depth discussion of evaluation methodologies and applications in "Evaluating the Virtual Classroom".

The Virtual Classroom is a specially tailored and enhanced Computer-Mediated Communication System for learning and communicating. Students in the Virtual Classroom share their thoughts, questions, and reactions with professors and classmates using computers and software that enables them to send and receive messages, interact with professors and classmates, read and comment on lecture material, take tests and receive feedback without having to attend scheduled classes. Learning can take place at any location and at any time.

This chapter builds upon a major study whose goal was to demonstrate that it is possible to use computer-mediated communication systems to improve access to and the effectiveness of post-secondary educational delivery. The most important 'product' of the project was knowledge about the influence on this new technology of variations in student characteristics and implementation techniques and settings.

The chapter presents the data collection methods that were developed and discusses problems that arose and the relative fruitfulness of the different methodologies for evaluating the virtual classroom.

SESSION 11

Analysing Instructional Interactions on Electronic Message Networks

Four new research methodologies are presented by Jim Levin, Haesun Kim, and Margaret Riel, in their chapter "Analysis of Instructional Electronic Message Interactions".

Long-distance networks are beginning to be more widely used for instructional purposes. Yet the question remains: what are effective uses of these new instructional media? Can we just transfer conventional instructional practices over the whole cloth? Or do we have to develop a new set of practices, better suited to the new media? And what light does the analysis of instruction in a new media shed on conventional face-to-face instruction? These are questions that have motivated the research reported here.

This chapter presents four methodologies for analyzing educational interactions conducted via electronic networks: 1) *participant analysis*; 2) *intermessage reference analysis*; 3) *message flow analysis*; and 4) *message act analysis*. Each methodology is applied to a variety of different educational interactions, and the implications of the results are discussed.

A modified form of *participant structure analysis* is applied to nine electronic network interactions. This procedure analyzes the dimensions of size and organization of the network, the nature and organization of the networking activity, the response opportunities of the participants, the response obligations, and the evaluation of participation.

The other three analyses are applied to interaction on an world-wide instructional network, the Intercultural Learning Network. The corpus for this study is the set of messages sent from April 1986 to March 1987 (approximately 750 messages). The *intermessage reference analysis* looks at references to previous messages in each message,

and then draws a "message map" of interreferenced messages. This allows the identification of organized groups of messages, and the development of a global measure of the influence that a given message has on the interaction. In the *message flow analysis* the authors examine the density of messages on a given activity over time, and with this analysis are able to distinguish several very different kinds of network interaction. The *message act analysis* identifies for each message the major functions accomplished by the message. A message act classification, based on the analyses of the 750 message Inter-Cultural Learning Network messages, is presented.

SESSION 12

Review and Synthesis of Course Discussions

SESSION 13

Wrap-Up and Evaluation

This final session serves to wrap up the online course and to provide the opportunity to reflect on and assess the course design, the teaching approach, the materials, as well as the nature of the medium for graduate course delivery.